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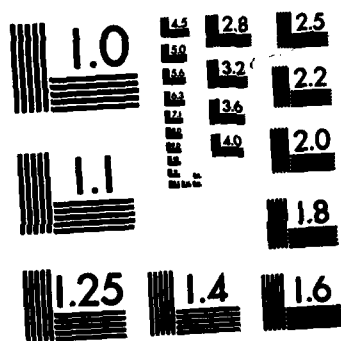
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**IMPLEMENTATION OF PLANNED CHANGE:
A REVIEW OF MAJOR ISSUES**

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) △ Pertinent literature was reviewed to provide a perspective for the study of change in organizations. This review focused primarily on the major issues identified in implementing organizational change with special emphasis on the role of management in this process. Based on a review of the findings, it was concluded that implementation can best be understood in functional terms. Several recommendations are made to aid researchers and practitioners in the investigation, application, and understanding of change processes.		

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FOREWORD

This effort was performed in support of independent exploratory development task area ZF66-512-001-050 (Factors Affecting the Acceptance of Change), work unit 03.08 (Impediments to the Implementation of Innovation), and is part of a larger effort investigating the management of change in organizations. Results are directed primarily at persons who research the implementation of change in organizations.

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SUMMARY

Problem

Because organizations are increasingly confronted with demands for change, it would be helpful to discern the principles and approaches that are likely to promote successful management of planned change.

Purpose

The purpose of this effort was to provide a perspective for the study of planned change in organizations by examining some of the major issues identified in the literature.

Approach

The literature review dealt primarily with the major issues identified in implementing planned change. Special emphasis was placed on the role of management in this process.

Conclusions and Recommendations

1. The study of management's role, with particular attention to change strategies employed, should be intensified.
2. Greater emphasis should be placed on qualitative approaches to the study of implementation and in the use of grounded theory.
3. Implementing change in an organization can best be understood in functional terms that take into account the variety of needs and concerns that are activated at both individual and organizational levels when change is introduced.

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INTRODUCTION

Problem

The investigation of innovation and change in complex organizations has emerged as one of the more fashionable areas of study in the social and behavioral sciences. It is the object of study of disciplines as diverse as economics and anthropology. Two factors partially account for this popularity and expressed interest. First, in many instances changes that are effected have significant consequences for individuals and social institutions. Second, the act of innovating is so heavily imbued with positive value that it is equated with improvement and, therefore, is regarded as highly desirable.

Despite the breadth and depth of interest in the innovation process, substantive progress is uneven. As Downs and Mohr (1976) indicate:

The theoretical value of the research that has been done is problematic. . . . Factors found to be important for innovation in one study are found to be considerably less important, not important at all, or inversely important in another study. This phenomenon occurs with relentless regularity. (p. 700)

They note that 34 of the 38 propositions affecting innovation cited by Rogers and Shoemaker (1971) were supported in some studies, but not in others. Further, the four propositions that consistently stood up involved a very small number of studies.

Reasons for this inconsistency can be accounted for by the lack of conceptual clarity with respect to several issues. For example, there has been a tendency to combine results from investigations studying different types of changes and innovations. This practice is questionable given the number of classification approaches that have been proposed (Zaltman, Duncan, & Holbek, 1973). Another possible source of inconsistency arises from the tendency to consider together studies in which quite different behaviors are being explained (e.g., time of adoption as opposed to decision to adopt or not to adopt) as opposed to the extent to which the organization has implemented the innovation.

From an applied perspective, the instability of the empirical findings due to the above problems and others has particular significance today. A case in point is the present intensive level of activity in the development and introduction of new electronic office systems that has been viewed by some as the contemporary equivalent of the industrial revolution. Given the prospect of organizational change of a large magnitude, the application of principles derived from studies that have employed different operationalizations of concepts needs to be addressed.

Purpose

The purpose of this review was to provide a perspective for the study of planned organizational change by examining the major issues raised in the literature.

APPROACH

This literature review was guided by the following conceptual framework. First, the implementation phase of the innovation process has heretofore been relatively unexplored. Second, there has been an overemphasis on overcoming resistance to change to the relative exclusion of other issues that are important in the implementation of change.

Third, there is a need for better understanding of the import of the various levels of management, particularly middle management, on the implementation of change.

This review was not designed to be exhaustive; its focus is primarily on change in organizational structure (e.g., technology) or process (e.g., control systems). Change involving inter- and/or intrapersonal characteristics (e.g., change resulting from sensitivity training) is beyond the purview of this effort.

FINDINGS

This section first considers and comments on the application of principles derived from studies of diffusion and adoption of innovation and on some of the prominent themes that run through the literature on initiation of organizational innovations. Then, in somewhat more detail, it considers organizational change studies and speculative papers that focus on the implementation phase of the change process with special reference to the role of management in this process.

Basic Concepts

The innovation process is conceptualized as a continually changing and evolving process composed of three generally recognized temporally ordered phases: (1) initiation, (2) implementation, and (3) institutionalization. The initiation phase commences with the conceptualization of the issue or innovation and ends with the decision to adopt a particular innovation.

Initiation Phase

The initiation phase, also called the mobilization phase (Berman & McLaughlin, 1978), encompasses the conceptualization of the issue and innovation and the search, evaluation, selection, and decision to adopt procedures. The initiation phase has been variously subdivided and named: issue perception, formation of goals, and search (Harvey & Mills, 1970); knowledge-awareness, formation of attitudes, and decision (Zaltman et al., 1973); and evaluation and initiation (Hage & Aiken, 1970). Since similar behaviors underlie the different subphase nomenclature, two major subphases are discerned herein: (1) the conceptualization of the change and (2) the adoption of the innovation.

The first subphase is concerned with the conceptualization of the issue and the innovation. It begins with the awareness of a performance gap; that is, decision makers discern a discrepancy between what the organization is doing and what it should or could be doing. Identification of an issue that the organization needs to respond to leads to the determination of how the organization should respond. Alternatively, the decision makers may first become aware of an innovation that may stimulate a need or desire to adopt it. This may then lead to the identification of an opportunity to use the innovation in the organization.

During the adoption subphase, the organization searches for new, alternative courses of action (i.e., innovations), evaluates these potential innovations, identifies the most appropriate alternatives, and selects an innovation. The decision to adopt the innovation is then announced or proposed to the organization.

Implementation Phase

The decision to adopt does not automatically assure implementation of the innovation, which requires that the innovation proposal be transformed into practice. It is here that the project confronts the reality of the organizational setting. This phase, also called the attempted implementation phase (Gross, Giacquinta, & Bernstein, 1971) and the initial implementation phase (Zaltman et al., 1973), begins after the decision to adopt the innovation is announced and is concerned with the initial attempt to introduce and integrate the innovation into the organization. The implementation phase is concerned with the actual use of the innovation by the members of the adopting unit. The innovation may be introduced on a trial basis and may involve a pilot study of the potential adoption. The focus in this phase is to change the behavior of members of the adopting unit to that specified by the innovation. If the requisite changes are not made by the members of the adopting unit, the process breaks down, the innovation is not utilized, and, therefore, it is not implemented.

Institutionalization Phase

The final phase of the innovation process presupposes success of the implementation phase and is concerned with the sustenance of the organizational change. It occurs when the behavior specified by the innovation becomes an accepted, routine, and enduring part of the standard repertoire of the organization. Synonymous terms are routinization (Hage & Aiken, 1970) and incorporation (Gross et al., 1971; Berman & Pauly, 1975).

Selective Review of Diffusion and Adoption Studies

Current thinking about the innovation process and recommendations concerning how best to deal with change have been strongly influenced by the early work on diffusion and adoption of innovations (Rogers, 1962). Rogers reviewed over 500 studies on rural, educational, and medical sociology, and constructed a classification scheme covering such areas as stages in the adoption process, characteristics of innovations, rates of adoption, and characteristics of early and late adopters. The culmination of this extensive summary was the development of a five-stage model of the adoption process: awareness, interest, trial, evaluation, and adoption. Note that the focus is mainly on preadoptive behavior. The overall conclusion of Rogers' work is that a high adoption rate among an aggregate or collection of individuals is a function of the proven quality and value of the innovation, the extent to which it has readily demonstrable effects, the accessibility of information about it, and its cost (Miles, 1964). These conclusions clearly conform to a cost/reward perspective of the change process. This is not unexpected since the major focus of these studies, as indicated earlier, is directed at the period prior to the adoption decision.

The influence of an approach that emphasizes user awareness, innovation usefulness, and adoption is also illustrated by the acronyms proposed by various writers to summarize the change variables. For example, Davis (1971) offers the acronym A VICTORY as a device for presenting the eight factors that he considers constitute an organization's readiness to adopt a given change: Ability (manpower, fiscal, and physical resources required), Values (consonance between the proposed change and the organization characteristics), Information (information about the qualities of the innovation), Circumstances (events relevant to the change), Timing (critical phases relevant to the change), Obligation (felt need to deal with particular problems), Resistances (inhibitors of change), and Yield (perceived prospect of payoff for adoption). Davis and Salasin (1975) have extended these eight factors into a set of questions that may be asked about a potential change situation. For example, one organization, the National Institute of Mental

Health, has used the A VICTORY technique as a framework for assessing the likelihood of adoption of innovation programs by individuals and organizations.

Glaser (1973) and Havelock (1974) also list factors that may influence the likelihood of adoption of innovations. Although these factors are formulated in somewhat different terms, there is considerable overlap with Davis' model. All three models essentially agree on three basic areas: (1) primary focus is on the preadoption stage, (2) initial resistance by individuals to the change is assumed to be the major barrier in the change process, and (3) effective change strategies must deal with the deficiencies that exist in the planning, communication, dissemination, quality, and quantity of available information.

Given a perspective that concentrates on attitudinal and/or motivational readiness and organizational capacity for change, it follows that mechanisms geared to promote adoption of change are of pivotal importance. One mechanism has been the change agent, a professional who influences innovation decisions in the desired direction. As Gross et al. (1971) observe:

The importance attributed to change agents during the initiation phase of planned organizational change seems to be based on the following reasoning: In general members of an organization are unable, or find it difficult, to diagnose their problems in a realistic or competent manner. Outside change agents with expert knowledge are assumed to possess the ability to approach situations in a more objective and a more sophisticated manner. . . . (and further) can more readily set forces in motion that will increase the amount and flow of communication. . . which in turn will result in their (organizational members) greater awareness of the need for change. (p. 24)

Support for the efficacy of the change agent function is provided by Greiner (1967) in a survey of a number of studies on organizational change. Successful change appeared to be a consequence of an external change agent, particularly when the change agent is considered to be of high prestige and expertise. Success of the change agent's efforts is measured in terms of client awareness of the innovation, the degree to which the client is persuaded as to its usefulness, and whether the innovation is actually adopted. These results are consistent with the communication models developed in the attitude change area (e.g., Hovland & Weiss, 1951). Sashkin, Morris, and Horst (1973) view the change agent's role in similar light, conceptualizing the change agent as a "knowledge linker." Argyris (1970) also sees the change agent playing a central role in three ways: (1) generating valid information within the client system, (2) making free and informed choices for organizational members, and (3) helping client system members develop internal commitment to the change process. A change agent can influence those individuals, groups, or institutions designated for change through coercion, persuasion, or education, depending on such factors as the nature of the change target's resistance (Kotter & Schlesinger, 1979).

In addition to the dominant position accorded the change agent in the literature on change, another mechanism geared to promote acceptance of change is the inclusion of subordinates in decisions concerning change. Based on his observations on sources of resistance manifested by persons and institutions, Watson (1973) compiled a set of recommendations designed to deal with this problem. Among these recommendations are: (1) the persons involved should have feelings of ownership--not a change devised and operated by outsiders, (2) participants should be involved in diagnostic efforts so that agreement on the basic problem can be reached, and (3) the project should be adopted by group consensus.

Several reasons have been advanced for the participation of subordinates in planned change. Argyris (1970) contends that resistance is heightened when the change decision is unilateral; that is, when innovation is initiated by superiors. Being excluded from the decision-making process may indicate to subordinates that they are not trusted or that they are being manipulated, and may inhibit the opportunity for them to express their concerns about the necessity for change. Other reasons for participation are that it leads to higher morale (Bennis, 1966), greater commitment (Oliver, 1965), and greater clarity about an innovation (Anderson, 1964, Chap. 6).

Although arguments for the use of change agents and participation of subordinates are persuasive, there is little empirical evidence on the relative effectiveness of strategies that employ either approach in comparison with other methods (Gross et al., 1971). The kind of evidence required can only come from longitudinal studies in which different initiation strategies (e.g., change agent, participation) are compared in terms of the degree of success of implementation and in which presumed intervening variables such as lack of clarity or commitment are systematically measured and linked to the independent and dependent variables. These studies are not presently available.

In summary, the general model of change that emerges from the diffusion and initiation literature emphasizes an adoption perspective; that is, a perspective where the rate of adoption is the primary concern and analysis is terminated when the innovation has become accepted or the decision to implement has been made. The dominant concern of this model is the problem of initial resistance. The use of change agents and participative decision making are the principal methods advocated to overcome resistance to effect successful change.

While the general model reported in the literature has had a significant impact on the conceptualization of planned organizational change, it has not been endorsed universally. Gross et al. (1971) conclude that the model growing out of this literature "has little use for understanding what transpires during an organizational implementation effort" (p. 39). The value of this perspective for implementation of change is further questioned when obstacles such as lack of training are relegated to a position of minor importance. In addition, this perspective does not take into account the fact that the usual change process in organizations is from the top down (unilateral) and involvement of subordinates in the change occurs after the decision to adopt. Even then, the participation by subordinates is usually very limited in implementing change.

Organizational Models of Innovation

In the previous section, the theme was stressed that the adoption perspective has captured the most interest and has been the dominant influence on the conceptualization and selection of strategies designed to deal with the innovation process. This section reviews briefly a model developed by Zaltman et al. (1973) that provides a more balanced picture of the innovative process. This model focuses on the dynamics of the innovation process in both the initiation and the implementation phases. In addition, this model specifically addresses the nature of the innovation process in the organizational context, in contrast to the previous work cited which studied innovation as related to individuals or aggregates.

Table 1 presents the organizational model developed by Zaltman et al. (1973), as well as variant stage models of other investigators. As can be seen in Table 1, the Zaltman et al. model is composed of two major stages--initiation and implementation--and their respective substages. In their conceptualization of the innovation process, Zaltman and his colleagues acknowledge the importance of the nature of the innovation and the effect

Table 1
Summary of Organizational Models of the Innovation Process

Stage	Zaltman, Duncan, & Holbek (1973)	Hage & Aiken (1970)	Harvey & Mills (1970)	Wilson (1966)
Initiation	1. Knowledge-awareness substage	Evaluation	Issue perception, formation of goals, search	Conception of the change, proposing of change
	2. Formation of attitudes toward the innovation substage			
	3. Decision substage			
Implementation	1. Initial implementation substage	Implementation	Choice of solution	Adoption and implementation
	2. Continued-sustained implementation substage	Routinization	Redefinition	

Note. Adopted with modification from Zaltman, Duncan, and Holbek, 1973.

of its attributes on change at the various substages. Accordingly, at the knowledge-awareness substage, such attributes as communication (e.g., ease of dissemination) are of central importance whereas social (e.g., risk and uncertainty) and financial costs may be of most concern at the attitude-formation and decision substages respectively. For the implementation substages, interpersonal relationships and modifiability of the innovation may emerge as the most important attributes affecting change.

In its examination of change, this model also attempts to identify the factors affecting resistance to innovation at each stage of the innovation process. For example, the major source of resistance operating in the knowledge-awareness substage involves the issue of stability whereas, at the sustained-implementation substage, disillusionment produced because of false expectations may be the major determinant of resistance. One other distinguishing feature of this model is the delineation of organizational structural variables and their differential effect on the innovation process. Zaltman et al. attempted to connect major organizational variables to the innovation stages. For example, they hypothesize that a high degree of formalization (emphasis on rules and regulations) may inhibit initiation of innovation because the existing procedures are so rigidly specific they deter organizational decision makers from seeking or being open to new sources of information. Conversely, this high degree of formalization may facilitate implementation precisely because of clearly specified, well defined rules that dictate how the organization functions.

Three other organizational models are presented in Table 1 for alternative organizational views of the change process. The Harvey and Mills model (1970) focuses primarily on the initiation stage with little emphasis on implementation. Issue perception (identification of what requires a response), formation of goals (how the organization should respond), and search (determination of possible actions the organization might take) are issues that one must contend with at the preadoption level. Wilson's model (1966) also emphasizes the initiation of change. Wilson does discuss, however, the greater potential for conflict and need for bargaining at the implementation stage because of the impact the innovation may have on different groups or units. He argues that it is easier to initiate innovation than to implement it. He suggests that it is "easier to increase the organization's capacity to generate new proposals than it is to increase its capacity to ratify any given proposal" (p. 207). Hage and Aiken's model (1970) comes closest to the Zaltman et al. model in that it emphasizes initiation and implementation equally and regards the structural characteristics of organizations as important factors in the attainment of change. It is not as complete as the Zaltman et al. model since it does not attempt to specify what influences the relationship between organizational characteristics and rate of innovation at the various stages in the innovation process. Further, it ignores effects of social and psychological variables.

In sum, each of the four models concerns itself to some degree with the initiation and implementation phases of organizational change. Of the four, the Zaltman et al. model is the most complete because it (1) presents the most balanced treatment of the major stages, (2) attempts to relate both psychological and organizational structural characteristics to the innovation process, and (3) recognizes the different dilemmas that an innovation may pose at the different stages in the innovation process. Although all four models are speculative because of the paucity of systematic empirical research, particularly at the implementation stage, the Zaltman et al. model captures the multifaceted nature of change in organizations. It can serve as a framework for investigating the salient factors operating in organizational change while providing researchers with a set of testable hypotheses.

Implementation of Innovation

Three distinct operational definitions of innovation-related behavior can be found in the literature: (1) time of first adoption, (2) decision to adopt or not to adopt, and (3) the degree to which an organization is committed to or has implemented an innovation. The fact that innovation research has traditionally exhibited by far the most interest in the first two operational definitions has drawn criticism from several quarters. For example, Downs and Mohr (1976) contend that, while information about the sequence of events leading to adoption is useful, it is more desirable to discover and examine the processes that operate when an innovation effectively replaces an old approach. Implementation "comes closer to capturing the variations in behavior that we really want to explain" (p. 709). Berman and McLaughlin (1974) concur. They conclude from their review of a number of case studies on educational innovation that the most difficult and complex aspect of the problem of innovation is postadoptive behavior, specifically the implementation process.

In almost all the instances studied, adoption was not the issue; problems of implementation dominated the outcome and success of the innovation projects. The innovations typically were initiated with a high level of enthusiasm and support by faculty and staff but these innovation plans failed to achieve their objectives because of unanticipated and often prosaic difficulties and obstacles encountered during the course of project implementation. (p. 8)

Similar accounts of implementation problems can be found in other forms of innovation activity. A litany of problems emanating from attempts at implementing products from the research and development cycle was cited in a study by Booz-Allen and Hamilton (1958). Based on accounts of 120 laboratory research directors, they report a failure range for their products from 50 to over 90 percent. Similarly, Radnor, Rubenstein, and Tansik (1970) reviewed 80 business and government groups engaged in operations research/management science (OR/MS) activities and found that 86 percent reported implementation problems.

While the issue of implementation is clearly important, relevant research is hard to find. Ackoff (1961) observed "the domain of implementation has been almost untouched by scientific hands" (p. 3). Seven years later, in an annotated bibliography of change literature prepared by Radnor and Mylan (1968), only 15 of 750 references were devoted to the topic of implementation and most of these were impressionistic or speculative in nature. In 1976, Schultz and Slevin (1976) again noted that there had not been much research on implementation and, further, that the "total amount of scientific man-hours spent on the implementation problem is but a small fraction of the amount of time and effort spent in the development of new and improved models" (p. 153). They added, however, that, although the trend appears to be changing, it will be some time before a substantial body of information is accumulated.

The divergence between expressed interest and the unavailability of pertinent research is a reflection of an amalgam of practical, methodological, and theoretical difficulties encountered in implementing change and studying implementation of change. The following section addresses some of the problems encountered particularly with regard to organizational systems in the implementation of innovation in an organizational setting.

Constraints

Whether proposed changes are unilaterally imposed, a product of joint decision or a response to local or widespread problems, the complex realities of the organization intrude and, in many instances, limit the scope of the intended implementation effort. A case in point is the initially sanguine reaction that researchers and practitioners held in regard to the potential of job redesign as a point of entry for a broad-scale program of organizational change. This optimism has been tempered by the realization that redesign programs are overrun by other organizational systems and practices. According to Oldham and Hackman (1980), many small compromises are made so that the redesign program does not disrupt various organizational systems. This results in "changes (that) are safe, feasible, inexpensive--and ineffectual" (p. 249). They conclude:

Clearly we underestimated both the difficulty of carrying out significant changes in the work itself, and the degree to which changes in tasks wind up being altered by surrounding organizational systems, rather than vice-versa. (p. 250)

A somewhat similar position is taken by Narasimhan and Schroeder (1979), who conceptualize the OR/MS implementation as essentially a change process:

Organizational factors play a secondary, albeit important, role as determinants of change. Organizational factors define the scope of the intervention effort of the scientist and thereby exert an indirect influence on the changes that occur. (p. 82)

For example, an internal change advocate and other training materials were employed in the implementation of a major computerized shipboard system for the U.S. Navy (Abrams, Sheposh, & Licht, 1974; Abrams, Sheposh, Cohen, & Young, 1977). This work was prompted by documented misuse and nonuse of technological systems, in some cases years after their introduction (Mecherikoff & Mackie, 1970). It was essential that the proposed change advocate be a member of the user group, as well as an experienced technician from the rating that would use this new system. In this role, his shipboard responsibilities were to facilitate the introduction of the new equipment by being knowledgeable of pertinent information, having shipboard training exercises and documentation at his disposal, and representing the needs of the crew to system developers. Responses from Navy technicians obtained in an earlier phase of the project indicated that they were wholly in favor of the change advocate as conceptualized. After the selection and training of the prospective change advocate, an attempt was made to implement the change advocate in an operational setting. Several months later, it became clear that neither the change advocate nor other implementation techniques (e.g., training aids) had any real impact on the operation of the equipment. The project was terminated shortly thereafter.

Several reasons are posited for this failure. First, the operational setting permitted little opportunity for surveillance on the part of the investigators to bolster or modify the effort to give the change advocate and implementation materials a fair test. Second, other competing demands on the change advocate and technicians, particularly the increased workload demanded from shipboard exercises, prevented the sufficient allocation of time for a fair and thorough trial. Third, some fear was expressed that the change advocate role might have a potentially erosive effect on the established formal chain of command. From the foregoing, the distractions and obstacles existing in an actual shipboard operational setting blocked the opportunity for a full and extended test of such techniques as a change agent and the likelihood of implementing change under such conditions is remote.

Frank and Hackman (1975), in an article on job enrichment, detailed the reasons why a specific work redesign attempt had no impact. Among the factors that they felt undermined the integrity of their proposed redesign were computer difficulties, increased seasonal workload, an influx of part-time employees, and the departure of the executive vice president who had been instrumental in the initiation of the project. Based on their experiences, Frank and Hackman offer several recommendations to deal with these issues. Although the prescriptive guides for implementation offered by Frank and Hackman were directed at the issue of job enrichment, they are generalizable to the broader implementation area. For example, they suggested that "An explicit diagnosis of the target jobs and of the surrounding social and technical systems should be carried out before the changes are initiated" (p. 431) and those "responsible for work redesign projects should anticipate setbacks and be prepared for continuous evaluation and revision of action-plans throughout the project" (p. 434). Further, Oldham and Hackman (1980) remark:

The rigidities built into an organization's technological, personnel, and control systems (which are instrumental in the integration of the change into the organization) often can prevent the installation of meaningful changes in how work is designed. (p. 258)

The above examples imply that any attempt to explain insignificant changes or the vanishing effects of intervention efforts exclusively in terms of resistance to change does not do justice to the complexity of organizational reality. Miller and Freisen (1980) propose an alternative view. They suggest that:

Any emerging organizational tendency, whatever its direction, will tend to have momentum associated with it. . . . Most organizations are always changing. They appear to be biased in their direction of evolution so that they generally extrapolate past trends. (p. 592)

They imply that less than total acceptance of a change cannot be wholly explained by the antipathy of people toward the change, but may also result from overwhelming organizational forces set into motion much earlier in the history of the organization. The upshot of this section is that in order for an implementation program to be successful, it must be sensitive not only to the potential sources of active resistance but also to the overall pattern of organizational systems and practices.

Facilitators

The previous section called attention to some of the constraints that exist when managing change. There are also facilitators that are operative in these situations. Bikson, Gutek, and Mankin (1981) have identified two factors that contribute to the facilitation of change: the roles of key actors and incentives for users.

The term "key actor" refers to those who control important decisions regarding how the new system is ushered in and used (Danziger & Dutton, 1977). The properties and features of the change determine the key persons in the implementation effort. For example, in some change situations, top management may have the greatest impact whereas, in others, unit heads or external change agents may be the most critical figures. Obviously, the identification and selection of the appropriate key actors is a necessary step in attaining successful change.

The other factor, incentives, clearly points to the reward allocation system of the organization facing change. As Lundberg (1980) noted, rewards serve as a form of feedback that is necessary if organizational processes are to be altered. Lawler (1977) also touched on this theme. Reward systems can be helpful in communicating the significance of the implementation effort to organization members. An example provided by Lawler was a work redesign effort in which, prior to the job changes, all involved were given pay increments commensurate with the increased responsibilities of the redesigned job. This concrete change in pay communicated to the workers that they were going to perform more important work and that the change was an organizational fact. Goodman (1979) reported on the efficacy of internally mediated rewards. For example, an intervention that provided workers with greater authority and responsibilities in decisions regarding safety produced better work safety practices. Bikson et al. (1981) suggested that two types of incentives operate in the service of change at the broader organizational level: incentives linked to an increase in production efficiency and incentives linked to the enhancement of bureaucratic self-interest.

In summary, potential facilitators such as those discussed above exist in all change situations. To the extent that key members can be accurately identified and utilized and appropriate incentives identified and exploited, the implementation of change will be successful.

Research Examples

As suggested earlier, there is a paucity of empirically-based work on implementation. This section describes two studies that attempted to research the implementation process longitudinally.

The first (Gross et al., 1971) is an intensive study of an educational innovation (the catalytic role model) introduced into an elementary school. The authors were interested in isolating factors that inhibit or facilitate implementation. They state that "the widely held assumption that most organizational members are resistant to change is, to date, far more rhetorical than demonstrable." Gross and colleagues have serious reservations about the widely used explanation that the fate of planned organizational change is a function of the ability of the change agent or management to overcome the initial resistance to the innovation of the members of the adopting unit. They contend that this explanation represents a truncated perspective of the implementation phase of the innovation process and that the degree of implementation of an innovation is a function of a more complex formulation. They hypothesize that the following three interrelated conditions also have an effect on the success or failure of innovations.

1. Members of the adopting unit who are not resistant to the innovation or whose initial resistance is overcome may encounter barriers that make implementation difficult or impossible.
2. Members of the adopting unit are dependent on management to overcome organizational barriers to implementation.
3. Members of the adopting unit who are not initially resistant to the innovation may become resistant as a result of the barriers encountered during the implementation phase.

The researchers' strategy was to conduct a study of the implementation of an innovation in an organization whose members did not appear to be initially resistant to the change. They hypothesized that, if the adopting unit members offered no initial resistance to the innovation and the proposed change was successfully implemented, the truncated resistance explanation would be supported. However, if the implementation of the innovation failed, the investigators' contention that factors other than resistance to change were active would be supported.

An intensive 6-month-long investigation of the attempted implementation of an innovation at an inner city elementary school was conducted. The innovation, the catalytic role model, was a radical redefinition of the traditional teacher's role tailored to motivate and improve the academic achievement of ghetto students. For 175 pupils, there were 11 full-time teachers who were all volunteers. They indicated that new methods were needed to motivate their students, expressed a strong interest in educational change, and wanted to be involved in the innovative school. From this, the researchers concluded that the teachers were not initially resistant to the innovation.

The innovation was introduced to the staff in mid-November 1966 and implementation began 2 months later. The operational definition of implementation was the extent to which the teacher's performance was congruent with the catalytic role model 6 months after the introduction of the innovation. Data were collected in three phases. In Phase 1, data concerning the school climate, social structure, and the teachers' role performance prior to the implementation were collected through informal interviews, conversations, classroom observations, and examination of school records and documents. In Phase 2, data collection consisted of formal interviews conducted after 3 months of attempted implementation. The interview was made up of fixed-choice and open-ended questions that tapped the teachers' feelings and perceptions about the innovation at various times. A month later, in Phase 3, systematic classroom observations were made and the Edwards Personal Preference Schedule and a questionnaire on background characteristics, career

aspirations, and job satisfaction were administered to the teachers. Information was also obtained from school documents, daily observations, and informal talks.

Data analysis revealed that the degree of implementation of the innovation was minimal. Most of the time the teachers were performing in the traditional role; very little instructional time that conformed to the catalytic role model was noted. The low degree of implementation was attributed to five major barriers: (1) the teachers' lack of clarity about the innovation, (2) their lack of the skills and knowledge necessary to perform the new behaviors, (3) the unavailability of required instructional materials, (4) the incompatibility of the innovation with existing organizational arrangements, and (5) the lack of staff motivation. The first four barriers existed during the initiation phase and persisted throughout the implementation phase; the fifth developed during the implementation phase. Further, their analyses suggested that the existence and persistence of the barriers could be attributed to an underlying condition: the failure of the administration to provide effective procedures and feedback mechanisms to identify and resolve anticipated and unanticipated problems or barriers.

In conclusion, the researchers proposed that a theory of the implementation of innovation should be based on the following factors. If members of the adopting unit are initially resistant to change, overcoming this resistance by management or a change agent is an initial prerequisite. Next, the degree of implementation of an innovation is a function of the extent to which the above mentioned five barriers are present. Finally, the presence and extent of these barriers is a function of the performance of management.

The second study reviewed was a 4-year, 2-phase investigation (Berman & McLaughlin, 1978) of a nationwide sample of educational innovations funded by federal programs: Elementary and Secondary Education Act (ESEA) Title III, Innovation Projects; ESEA Title VII, Bilingual Projects; Vocational Educational Act, 1968; and Right-to-Read. The sample projects were funded from 3 to 5 years. Phase 1 focused on the initiation and implementation phases of 293 projects funded under the four programs. The projects were studied during their last or next to last year of funding. During this phase, 1735 staff members were interviewed at the 293 sites and field work was conducted at 29 sites. During Phase 2, a sample of 100 ESEA Title VII projects 1 or 2 years after termination of the funding was the focus of study. During these Phase 2 field studies, 18 sites and 1343 staff members were interviewed in all of the projects.

The purpose of the study was to improve federal change agent policies "by describing how the process of innovation works in its local setting and by trying to discern what factors affect the innovation process and its outcomes" (p. v). Because of the lack of theory about the local process of change, the authors considered the study to be exploratory and aimed to formulate hypotheses, not to test them. Outcome indicators of Phase 1 were changes in student performance and teacher behavior, the project's relative success in achieving its goals, implementation difficulties, expected degree of continuation, and degree of similarity between the proposed project and the actual project implemented. Phase 2 outcomes studied were the continuation and dissemination of projects after termination of federal funding.

The research findings showed that federal seed money stimulates the adoption of innovations by local education agencies. However, adoption did not ensure implementation and in turn, implementation did not ensure continuation of the project. Successful implementation depended primarily on how the local district conducted the project, rather than on the type of federal program or the amount of funds. The decision to continue a project after the funding period was a function of organizational and political factors,

independent of the success of the implementation of the innovation. Generally, projects adopted with a broad-based support were more likely to be implemented in a mutually adaptive way and continued after the funding period.

Clarity of project goals, an effective project director, active support of the principal, and the quality of teacher working relationships were vital for implementation. The project director had no significant effect in the continuation of the project, while the principal's support was crucial to its continuation. The principal was bestowed the title of "gatekeeper of change." The teacher's sense of efficacy was positively related to the implementation outcome, and the teacher's years of experience had a negative effect on implementation.

The following elements of strategy were found to be effective: concrete, teacher-specific, and extended training, classroom assistance from project or district staff, teacher observation of similar projects, a chance to discuss problems with teachers who had successfully implemented the innovation, regular project meetings, teacher participation in project decisions, local development or modification of materials, and principal participation in training. These elements, particularly in concert, promoted mutual adoption and increased the chances of implementation and continuation.

The findings from these two studies are of particular importance in that the researchers scrutinized actual implementations over fairly long periods of time. In both studies, the incidence of successful implementation was low. In both studies, initial resistance was not a factor. Further, both studies call attention to properties of the larger organizational reality that were instrumental in obstructing the implementation goals.

Three Perspectives

This section reviews a series of factors that affect the implementation of planned change. The following implementation problems were listed by Radnor et al. (1970) from their review of the R&D process and the management of OR/MS activities:

1. Recognition of the need for an item.
2. Willingness of the individuals in the receiving unit to interrupt ongoing work to handle something new.
3. Technical mismatch in understanding the specifications of the item.
4. Mismatch in understanding objectives of the project or task.
5. Preexisting relations of trust or confidence between the parties to an implementation transaction.
6. Degree of involvement in stages of a project.
7. Self-interest.
8. Urgency.
9. Perceived threat.
10. Level of managerial support.

11. Point in time at which a management commitment is made to the project (i.e., the decision to set up a formal project mechanism).

Radnor et al. conclude that the factors underlying implementation problems in the R&D sphere are similar to those in the area of OR/MS. From this initial step, they constructed a model to describe and relate the variables identified as significant to the implementation process. They conceptualize their model in terms of a series of connected propositions. Each proposition or module consists of a set of independent variables and a dependent variable. The interesting feature of their model is that certain independent variables become dependent variables and certain dependent variables become independent variables in ensuing modules. Table 2, taken from Radnor et al. (1970, p. 974), presents these propositions. Each variable is identified by Arabic numerals and each proposition or module, by Roman numerals. For example, Proposition I in Table 2 states: The level of implementation (item 1) depends on the client's willingness to support the implementation (item 2), the availability of money and personnel for implementation (item 3), and the client's ability to perform any necessary new tasks (item 4).

The general implementation model proposed by Radnor et al. (1970) is of value, from both a theoretical and applied point of view, for studying the implementation process in various situations because it provides the prospective researcher with testable hypotheses. Furthermore, the interlinking propositions that characterize the model call attention to the complex interrelationships of variables that exist when an organization is undergoing change. The model also highlights the necessity for using a variety of implementation strategies if the implementation is to be successful. However, this model is not without flaws. First, there is no indication of the relative importance of the model's propositions to the change process. Second, there is no formal treatment of the temporal aspect or stages involved in the implementation process. It is difficult to determine from the presentation which of the propositions are more important early in the implementation process and which are more salient at a later stage.

A different perspective with respect to the factors that influence the implementation process is provided by Pierce and Delbecq (1977). They regard organizational innovation as a complex multiphased activity that moves from initiation to adoption to implementation. They propose three predictive models, one for each phase. Based on their review of the literature, Pierce and Delbecq identify the organizational factors that they believe are instrumental in the facilitation of change. They present these factors in terms of a tricomponential framework: organization structure, context, and member attributes. The major structural variables are considered to be differentiation, professionalism, decentralization, and formalization. The contextual attributes include environmental uncertainty, size, age, and interorganizational dependence. Member attributes are organizational members' attitudes (e.g., job satisfaction, motivation, and values). Pierce and Delbecq maintain that each of these variables is independently related to organizational innovation and, in varying combinations, will influence the phases of initiation, adoption, and implementation. Further, they argue that a conjunctive, rather than disjunctive, and additive, rather than multiplicative, model is most appropriate at the present stage of knowledge. In their exploratory implementation model, implementation is a function of differentiation, professionalism, decentralization, formalization, environmental uncertainty, size, age, interorganizational interdependence, job satisfaction, job involvement, performance dissatisfaction, intrinsic motivation, and change attitude.

The thrust of Pierce and Delbecq's position is that a discussion of innovation is incomplete unless all three factors are recognized. They are unclear, however, as to how properties from these three factors combine. For example, they state: "These attributes (attitudes and values) will sometimes dominate and sometimes mediate structural

Table 2
Linked Propositions Comprising the Radner, Rubenstein, and Tanakh
Implementation Model

Propo- sition	Independent Variables Determining	Dependent Variables
I.	2. Client willingness to support implementation 3. Availability of money and personnel for implementation 4. Client's ability to perform any necessary new tasks	1. Level of implementation of the project
II.	3. Client willingness to change ongoing work patterns (if necessary for implementation) 6. Client's perception of project results: costs, benefits, and threats 7. Top-management support of the project and of the project's entire context	2. Client willingness to support implementation
III.	7. Top-management support of the project and of the project's entire context 8. Organizational and external environmental conditions	3. Availability of money and personnel for implementation
IV.	8. Organizational and external environmental conditions 10. Top-management support of variables 24. Relevant past outcomes	7. Top-management support of the project and of the project's entire context
V.	11. Project characteristics in the context of the researcher's project portfolio (in terms of technical, organizational, and temporal aspects) 12. Perceived relevance (or congruence) of the project with the client's perceived needs (in terms of technical, organizational, and temporal aspects) 13. Client involvement in preproject conditions 14. Client's orientation and goals, his attitude and confidence in the research techniques, and his perception of self-interest. Includes risk aversion and perception of reward cost structure	6. Client perception of project results, costs, benefits, and threats
VI.	13. Client involvement in preproject conditions 14. Client's orientation and goals, his attitude and confidence in the research techniques, and his perception of self-interest. Includes risk aversion and perception of reward cost structure 23. Client's perception of self-interest	3. Client willingness to change ongoing work patterns if necessary for implementation
VII.	11. Project characteristics in the context of the researcher's project portfolio (in terms of technical, organizational, and temporal aspects) 15. Recognition of a "need" by the client (in terms of technical, organizational, and temporal aspects)	12. Perceived relevance (or congruence) of the project
VIII.	17. Researcher's perception of client's needs (in terms of technical, organizational, and temporal aspects) 18. Level of researcher's abilities, both technical and organizational 19. Researcher's orientation and goals 20. Client behavior with respect to the project 26. Researcher's perception of self-interest 27. Researcher's willingness to satisfy the client's needs	11. Project characteristics in the context of the researcher's project portfolio (in terms of technical, organizational, and temporal aspects)
IX.	9. Level of client's abilities 14. Client's orientation and goals, his attitude and confidence in the research techniques, and his perception of self-interest. Includes risk aversion and perception of reward cost structure 21. Client's actual needs 22. Client-researcher interaction (degree of mutual involvement, use of liaison agents)	15. Recognition of a "need" by the client (in terms of technical, organizational, and temporal aspects)
X.	8. Organizational and external environmental conditions 15. Recognition of a "need" by the client (in terms of technical, organizational, and temporal aspects)	20. Client behavior with respect to the project
XI.	18. Level of researcher's abilities, both technical and organizational 19. Researcher's orientation and goals 21. Client's actual needs 22. Client-researcher interaction (degree of mutual involvement, use of liaison agents)	17. Researcher's perception of client's needs (in terms of technical, organizational, and temporal aspects)
XII.	8. Organizational and external environmental conditions 14. Client's orientation and goals, his attitude and confidence in the research techniques, and his perception of self-interest. Includes risk aversion and perception of reward cost structure 19. Researcher's orientation and goals 23. Preexisting relations of trust and confidence between client and researcher	22. Client-researcher interaction (degree of mutual involvement, use of liaison agents)
XIII.	14. Client's orientation and goals, his attitude and confidence in the research techniques, and his perception of self-interest. Includes risk aversion and perception of reward cost structure 16. History of client-researcher interaction 19. Researcher's orientation and goals 22. Client-researcher interaction (degree of mutual involvement, use of liaison agents)	23. Preexisting relations of trust and confidence between client and researcher

NOTE: Taken from Radner, Rubenstein, and Tanakh, 1979.

variables" (p. 36). However, this statement seems to argue against the linear additive model that they have proposed. Overall, this model is useful as a rudimentary framework within which the effect of the proposed variables on implementation can be studied.

A third perspective that differs from the other two in focus and emphasis is that offered by Bennis (1969). He views implementation primarily in terms of overcoming resistance to change. According to Bennis, the necessary elements for effective implementation include the interpersonal competence of managers, reduction of inter- and intragroup tension through increased understanding, development of team management, reduction of conflict through problem solving, cultivation of mutual trust, client understanding, self-motivated change through legitimation, and reinforcement of top management. Clearly, this perspective emphasizes the interpersonal aspect of the implementation process. Although he does argue that an organic, as opposed to mechanistic, organization system is necessary, Bennis' observations and recommendations have received a great deal of attention and are of use, particularly with respect to the question of interpersonal strategies. The major weakness with his position is that the implementation process is viewed primarily as an exercise in persuasion.

Overall, these three perspectives are useful in identifying important factors that must be studied to enhance our understanding and predictive ability with respect to implementation. In varying degrees, the three perspectives acknowledge the importance of structural, contextual, process, and intrapersonal variables. A literature review of the effects of these variables on the implementation process is presented in the appendix.

Overview

Effective implementation of an innovation is influenced by a variety of organizational and individual factors, as indicated by the work reviewed in the previous section and in the appendix. While no agreed-upon formulation exists, a tenable view is that these variables complement and reinforce each other in the determination of implementation of change. Figure 1 provides a proposed schematic overview of the implementation process in which structural, contextual, and individual factors are designated as inputs. They influence and are influenced, as indicated by the bidirectional linkages, by such organizational process factors as managerial control systems and nature of communication. In turn, the organizational processes shape the goals and action strategies that make up the implementation program. The implementation effort determines the extent to which the innovation is integrated into the organization, which ultimately shapes organizational effectiveness. The resultant change in organizational effectiveness then serves as a new source of information that modifies existing input and process factors.

Inherent in the proposed model are two basic notions that have implications for the conceptualization of change in organizations. First, the model attempts to convey the complex interactive nature of the various factors on the process of implementation of innovation. Second, the model represents the organization during the implementation of an innovation as an open, dynamic system. Thus, the model argues against the designation of one factor or a set of factors as the sole or even major contributing force on implementation effectiveness. The model also characterizes the implementation process as a feedback system. The success or failures that an organization realizes vis-a-vis the implementation of an innovation are influenced by individual and organizational factors and, in turn, have a significant impact on them.

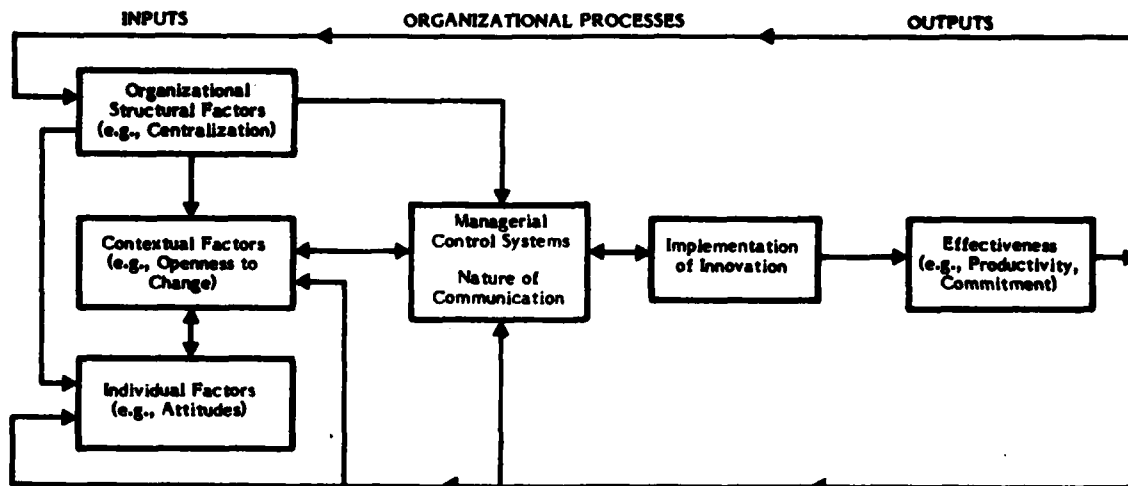


Figure 1. Schematic overview of the relationship of structural, contextual, and individual factors affecting the implementation process.

Management's Role in Innovation

There is consensus of opinion regarding the importance of top management's involvement in the innovation process (Pierce & Delbecq, 1977). Top management, according to March and Simon (1958), affects the innovation process in several ways. It fosters the institutionalization of innovation, determines the mechanisms of communication and coordination, and sets the time period for the completion of the innovation. Shepard (1967) asserts that top management's involvement is necessary to overcome subunits' resistance to change that results from a disturbance in the organization's distribution of power. Results provided by Radnor et al. (1970) indicate that top management support for a project dictates the availability of resources needed to implement new technology. This was further substantiated by Chakrabarti and Rubenstein (1975), who studied the effects of several factors on adoption of NASA innovations in 65 organizations. They concluded that support of top management (e.g., being highly receptive to new ideas and encouraging experimentation) was a key factor in the ultimate success of any innovation requiring relatively large commitment of resources.

The importance of management involvement is not restricted to the top strata. Successful change requires the talents and attention of managers at all levels. Specifically with regard to the implementation question, Gross et al. (1971) emphasized the critical role of management. According to Gross and his colleagues, it appears that administrators assume that their responsibility is ended when the decision to adopt a new program is made. They contend, however, that:

It is management that is in the best position to anticipate problems and to set forces in motion to minimize or overcome them. It is management's responsibility to develop an overall strategy for change. (p. 212)

These observations were supported by findings from the Rand study on implementation of educational innovations (Berman & McLaughlin, 1978). They concluded that leadership was a vital factor at both the school and project level.

Effective implementation required a good project director and a supportive school climate led by an active principal. But continuation depended less on having an effective project director than on early and lasting support by the principal. (p. 34)

The role of management in implementation is seen by some experts as primarily that of a change agent. Kotter and Schlesinger (1979) feel that, in a rapidly changing world, managers need to sharpen their skills at diagnosing resistance to change and selecting the appropriate methods for overcoming it. Lawrence (1969) contends that many of the problems of resistance to change arise from the orientation that staff specialists are likely to hold about their jobs and their own ideas of introducing change. Although staff specialists are typically highly knowledgeable about the technology in question, they have had insufficient interaction with operating groups to acquire an understanding of the psychological and social concerns of the operators. Lawrence maintains that management is in a position to influence the attitudes of these staff specialists, thereby dealing with and resolving major resistance at its source.

Lee (1977) has approached the issue of organizational change from the perspective of power. He maintains that, regardless of their theoretical foundations, all change models involve the concept of power. Lee defines power as leader opportunity and ability to influence behavior, and he contends it is the major element in producing change. He feels that it would be beneficial to take a systematic power inventory before attempting any organizational change. By determining the level of leader power at the managerial levels, the most appropriate strategies can be identified since they are dependent on the amount and nature of power that is needed to implement them.

Oldham and Hackman's (1980) comments on the "small change" and "vanishing effects" phenomena that are so prevalent in the work redesign research are also relevant to the present discussion of management's role in the change process. To counteract the trend of insignificant changes in work redesign, these efforts must be conceptualized, not as a short term limited fix but, rather, as a modification that involves changes in how the social system as a whole functions. This position brings to mind Lawrence's contention (1967) that the true nature of resistance to innovation must be understood as resistance to the social change, not the technological change. Oldham and Hackman add:

We need much better understanding of the role of middle management when jobs and work systems are redesigned. In many organizations, middle managers, much more than supervisors or top managers, have responsibility for the organizational systems and practices that we have identified as critical to the potency and persistence of changes from the redesign of work. He is the middle manager, for example, who is most likely to be in a position to alter control systems to initiate a change in work technology; it is he or she who may be able to revise compensation practices or to redesign the job of a subordinate manager. (p. 275)

In this connection, Silverzweig and Allen (1976) list, among the factors for failure of organizational change, insufficient attention given to middle management. Frank and Hackman (1975) compiled a set of prescriptions to ensure effective implementation of work redesign. They recommended that an explicit diagnosis of the target job and the

surrounding social and technological system should be conducted. They cite the extent to which management itself is ready to handle the "extra burdens and challenges that will be created by change" as a centrally important factor.

At present, little is known how management, particularly middle management, is involved in change efforts. Research is needed to determine the kinds of behavior, managerial strategies, and other aspects of the manager's role that are likely to be engaged in the facilitation of change. Student (1978) sees the implementation of change as:

Management's crucial task in the years ahead. . . . Unfortunately, few managers possess the essential operating skills to implement change effectively. In the area of planned change, managers are surprisingly inept, and too often failures are explained away as resistance to change. (p. 28)

The literature states quite clearly that the support and commitment of top management is necessary in the innovation process. With the increasing attention on the implementation phase of the innovation process, there appears to be a growing concern over the roles that all levels of management, especially middle management, play in the implementation of change. Because of the paucity of empirical research on implementation, the nature of management involvement remains relatively uncharted. The following paragraphs review some of the thinking concerning management practices that may be employed in the implementation of an innovation.

First, it should be noted, in most treatments on the subject, change strategies have been viewed primarily as methods designed to deal with the problem of resistance (cf. Zaltman & Duncan, 1977). Important to the selection and use of strategies for managing change is an understanding of the key elements or factors that are essential in successful change programs. Student (1978) identifies five factors as determining the outcome of planned change; namely, influence, familiarity, testing, stress, and chance. These factors are described below.

1. Influence, according to Student, is the focal element in the change process. If subordinates perceive influence attempts as manipulative or arbitrary, they will offer resistance regardless of how much sense the change makes to them. Brehm's (1966) notion of psychological reactance is pertinent to this point. Thus, a precondition of effective influence on the receptivity of subordinates by managers is the idea that every person affected by the change can contribute to its successful implementation. By providing subordinates with an opportunity to influence the planned changes, they will have a clearer definition of the objectives and a stronger sense of responsibility for their success.

2. Familiarity, or exposure effects, emphasize the importance of time as an element of successful change. According to Student, favorable attitudes are a pre-requisite to voluntary behavioral change. Research investigating the minimal conditions for increasing an individual's attractiveness to an unfamiliar object or concept has revealed that mere exposure--the degree of contact the individual has with the object or concept--enhances the likelihood of acceptance (e.g., Zajonc, 1968). Thus, one purpose of implementation on a pilot basis in carefully selected parts of the organization is to provide exposure for all prospective users. "When the feasibility and benefits of an innovation can be established by a small group of initial participants, exposure can be instrumental in securing favorable attitudes and acceptance" (p. 30).

3. Testing acknowledges that participants will test the stability and predictability of the proposed change. Thus, time to evaluate and test directly if the change is soundly conceived is essential even when changes have already been successful elsewhere.

4. Consideration of stress, both at the individual and organizational level, is the fourth key element identified by Student. The extent to which behavioral change is required for adoption of the innovation determines the degree of stress. Student contends that:

The change process must be sufficiently slow and controlled to keep stress within acceptable limits, and the organization must have the resources available to limit stress by support, counseling, and shielding, as well as by slowing the change process. (p. 33)

5. Chance, which is Student's fifth and final factor, "acknowledges that no model can explain fully the process of change, or its results" (p. 33). Student maintains that managers must assume a flexible orientation. They must recognize that chance is an integral part of change and that the unforeseen consequences are not always undesirable and may, at times, be serendipitous.

Another perspective that is essentially an extension of Student's thinking on the change process is that proposed by Kotter and Schlesinger (1979). Their overall approach is predicated on the notion that managers underestimate or are unaware of the variety of ways in which people can react to organizational change and managers can positively influence organizational changes. Kotter and Schlesinger have drawn up a list of causes for the occurrence of resistance and a set of specific strategies for effective implementation of change. They feel the basic reasons people resist change are:

A desire not to lose something of value, a misunderstanding of the change and its implications, a belief that the change does not make sense for the organization, and a low tolerance for change. (p. 107)

Table 3 (taken from Kotter & Schlesinger, 1979) neatly summarizes the ways in which individuals and groups can be positively influenced during the change process. Six methods are identified, each linked with the situation in which it would be commonly employed and its advantages and drawbacks. According to Kotter and Schlesinger, successful change efforts entail the application of a number of methods, often in different combinations. Characteristically, successful efforts involve a realistic appraisal of the situation and an awareness of the strengths and limitations of the various methods. Selection of a change strategy is determined by the speed of change, the amount of preplanning, and the degree of involvement of others.

The failure of a university-based educational change project (McMillan, 1975) illustrates the need for appropriate selection of change strategies. Two of the propositions that underpinned efforts in this project to bring about change were participation of subordinates in the decision-making process and the use of change agents whose leadership style was marked by an interpersonal orientation. In attempting to explain the failure to implement, McMillan states:

Stuart-Kotze (1972) has suggested that for immature employees, effective leaders must exhibit a high level of "technical

Table 3
Methods for Dealing with Resistance to Change

Approach	Commonly Used in Situations	Advantages	Drawbacks
Education + communication	Where there is a lack of information or inaccurate information and analysis.	Once persuaded, people will often help with the implementation of the change.	Can be very time-consuming if lots of people are involved.
Participation + involvement	Where the initiators do not have all the information they need to design the change, and where others have considerable power to resist.	People who participate will be committed to implementing change, and any relevant information they have will be integrated into the change plan.	Can be very time-consuming if participators design an inappropriate change.
Facilitation + support	Where people are resisting because of adjustment problems.	No other approach works as well with adjustment problems.	Can be time-consuming, expensive, and still fail.
Negotiation + agreement	Where someone or some group will clearly lose out in a change and where that group has considerable power to resist.	Sometimes it is a relatively easy way to avoid major resistance.	Can be too expensive in many cases if it alerts others to negotiate for compliance.
Manipulation + cooptation	Where other tactics will not work or are too expensive.	It can be relatively quick and inexpensive solution to resistance problems.	Can lead to future problems if people feel manipulated.
Explicit + implicit coercion	Where speed is essential and the change initiators possess considerable power.	It is speedy and can overcome any kind of resistance.	Can be risky if it leaves people mad at the initiators.

Note. Taken from Kotter and Schlesinger, 1979.

competence"; that is, leadership behavior that teachers will respect and seek to emulate and which will be perceived as immediately useful. Had the clinic come to the school loaded with materials for teachers and with real experts who knew how to teach in a public school classroom, had they performed in a technically competent manner, and had the resultant benefits continued for a sufficient length of time, then it is likely that a climate of change would have developed in which teachers would have been more receptive to their high relationship leadership style. (p. 450)

Zaltman and Duncan (1977) interviewed over 75 professional change agents. One of the major objectives of the interviews was to identify the criteria that change agents consider in their selection of strategies for change. The investigators were concerned with four strategies: facilitation, reeducation, persuasion, and power. These four strategies conform to a large degree with Kotter and Schlesinger's typology of Table 3. Facilitation strategies ease the implementation of change (e.g., provision of funds, training materials). Reeducation strategies are characterized by the relatively unbiased presentation of facts intended to provide a rational justification for the change. Persuasive strategies attempt to bring about change in attitudes and behavior through logical arguments, emotional appeals, and authoritative facts. Power strategies use rewards, promises, threats, and coercion--the power of one's position to effect change.

Table 4 presents some of the conditions under which each strategy would most likely be used. This table is a distillation of Zaltman and Duncan's extended discussion of the four strategies. Table 4 indicates, for example, that a facilitative strategy would be most appropriate when the anticipated level of resistance is low, recognition that some change is high, and time is not a critical factor. It must be added that Zaltman and Duncan see as most promising an approach that incorporates multiple change strategies, possibly in some sequential order, to accomplish the desired ends. Overall, Zaltman and Duncan provide the most thorough and systematic treatment of strategies that may be employed.

Bigelow (1980) offers a rather ingenious approach to the application of strategies to organizational change. Bigelow's interest was on organizational changes that are rapid and discontinuous, as well as the more frequently studied slow continuous ones. Drawing upon Thom's (1972) topology theory, Bigelow developed a catastrophe model of organizational change that incorporates both types of change, as well as such variables as resistance to change and pressure to change. He identified four distinct strategies: incremental approach, precipitative approach, "cooling out," and blocking. The incremental approach is appropriate when rapid changes are not needed and consequences of change are ambiguous. The precipitative approach is useful when rapid changes are required and consequences are known. The "cooling out" approach might be of use in conjunction with an incremental approach to avoid "surprise reversal" (e.g., disillusionment). Blocking (e.g., playing the devil's advocate with respect to the proposed change) may be of use in organizations characterized by low resistance as a way of bringing it to the surface and clarifying issues. This model has implications for implementing planned change that may occur slowly or relatively rapidly.

Several investigators have recommended more concrete guidelines to manage change. Bellone and Darling (1980) recommended the following strategies for designing and implementing an innovation. First, information concerning the innovation should be disseminated to middle management, followed by appropriate training activities and

Table 4
Bases for the Selection of Implementation Strategies

Consideration for Selection	Strategy			
	Facilitative	Reeducative	Persuasive	Power
Awareness of the change target	High	Low	Low	---
Degree of commitment	High	---	Low	Low
Perceived need for change	High	Low	Low	Low
Capacity to accept change	Low	Low	High	High
Capacity to sustain change	Moderate	High	High	Low
Resources available to change agent	High	High	Low	High
Magnitude of change	High	High	High	Moderate
Anticipated level of resistance	Low	High	High	High
Time requirements	Low	---	High	High

Note. Developed from Zaltman and Duncan, 1977.

provision of systematic participation of key management and nonmanagement personnel. Gross et al. (1971) provided the following suggestions:

(1) making the innovation clear to the staff members involved in the implementation; (2) providing the training experiences required so that the staff will possess the capabilities needed to perform in accord with the innovation; (3) ensuring that the staff is willing to make the appropriate innovative efforts; (4) making the necessary materials and equipment available for implementation of the innovation; and (5) rearranging prevailing organizational arrangements that are incompatible with the innovation. (p. 214)

Berman and McLaughlin (1978) identified an overall effective strategy as one that supports mutual adaptation (where the project is adapted to the reality of the setting). The following were reported as having positive effects on project outcomes and continuations: (1) concrete and on-going training, (2) availability of local resource personnel who can provide practical advice "on-call," (3) observation of the project in other organizations, and (4) regular project meetings that focus on practical problems, not on administrative or routine matters. Other recommended strategies for managing implementation are emphasizing personal benefits of the innovation (Schultz & Slevin, 1976), creating pockets of commitment (Quinn, 1977), helping subordinates set performance goals (Walters & Associates, 1975). At the structural level, management of implementation would involve design and employment of boundary spanning units (Callahan & Salipante, 1979) and the establishment of objectives and budgets that are consistent with

plans and the use of control techniques to keep the implementation program on schedule (Meglino & Mobly, 1977).

To focus exclusively on behavior change techniques would be a mistake, since much can be done to effectuate implementation through planning, organizing, leading, and controlling. As Brightford (1975) suggests:

Sophisticated behavior-oriented techniques are bound to fail if one does not first concurrently improve the nuts and bolts of the management process. (p. 13)

Regardless of the specific strategy chosen, it will not work, if executed improperly. Here, the skill and leadership of management is essential. Finally, an implementation strategy is most effective when applied in concert with other strategies. Schultz and Slevin (1976) stated in their study of the implementation of OR/MS models:

Research on implementation is, by definition, management relevant. The interplay between research and management practice is certainly most evident in the nexus of implementation problems. (p. 171)

Assessing Implementation of Innovation

The need to assess the impact of an innovation on organizational performance is obvious. Clearly information, particularly cost-benefit data, must be obtained to justify the expenditure of time, money, and resources that are required both before and after the introduction of the innovation. Waters, Salipante, and Notz (1978) specify three types of evaluative information as essential: (1) diagnostic information on the organization's particular problem or needs, (2) implementation information or short-term feedback that may be used to modify the developing change, and (3) evaluation information or long-term feedback that indicates the extent to which the innovation has produced the intended results. The types of information specified by Waters et al. parallels the formative and summative distinction made with respect to evaluation programs (cf. Staw, 1977). Formative evaluation, which involves the process of selecting project goals and the fidelity of the actual to the proposed implementation, corresponds to implementation information. Summative evaluation, which involves determining whether or not the intervention works, corresponds to evaluation information.

The need for implementation information or short-term feedback cannot be overemphasized. Since actual implementation will probably reveal unanticipated problems, feedback concerning the progress of the implementation is essential to guide and modify, if necessary, the innovation itself. Procedures for obtaining the pertinent information have not been established. As Staw observes, "formative evaluation remains more an art than a science." One point seems clear, however--direct assessment is subject to the vagaries of evaluation apprehension and demand characteristics (cf. Campbell, 1969). To circumvent these problems when information for purposes of assessing implementation is required, greater emphasis should be placed on the use of unobtrusive techniques, such as structured observations and archival search.

Another point to consider in assessment of innovation implementation is whether the innovation is actually in use. Although this may seem obvious, Hall and Loucks (1977) point out that:

The assumption that the experimental group members do, in fact, use the "innovation" and that the comparison group members do not, needs to be addressed systematically rather than left to chance. (p. 264)

A case in point is Berman and McLaughlin's (1978) description of innovation "cooptation," the tendency to attend selectively and exclusively to those features of the innovation consistent with existing practices. Hall and Loucks (1977) have developed a focused interview technique in which a branching format measures levels of use. The "levels of use interview" procedure is generic, since it can be used with a variety of innovations. The branching format of the interview schedule is structured for eight levels of use. As examples, the first level is nonuse, the fourth level is a mechanical use of the innovation in which the user limits efforts to short-term, day-to-day use with little reflection, and the seventh level is integration where the user combines his own efforts to use the innovation with related activities of colleagues to achieve a "collective impact." The importance of first-hand knowledge concerning the level of use of an innovation is indispensable to determine its impact, since this information helps to militate against false assumptions and misleading interpretations about the effects of the innovation.

Summative evaluation of an innovation also raises the issue of the selection and measurement of outcomes. In certain circumstances, the planned innovation dictates a specific outcome. In many other instances, the outcome variables are more difficult to specify exactly, because of the nature of the organization and the innovation. Outcomes may range from "hard" economic variables (e.g., units produced per work hour) to "soft" social psychological variables (e.g., organizational commitment, group cohesiveness). These various measures may combine in some fashion for overall organizational effectiveness (cf. Kilmann & Herden, 1976). For a meaningful assessment of the impact of innovations, an approach that incorporates a variety of outcome measures is recommended, particularly in situations where the change is not completely predictable or the effects of the innovation have broad ramifications throughout the organization. In regard to single-versus-multiple measures, evaluation of an intervention or innovation may be subject to a lack of differentiation between measured improvement and goal accomplishment. As Staw (1977) suggests: "There may tend to be undue emphasis on a particular indicator of effectiveness at the expense of the overall construct of effectiveness itself" (p. 17). The use of multiple indicators of effectiveness, particularly when they can be assigned weightings of relative importance, is a partial solution to this problem.

This section has, up to this point, discussed some of the relevant issues in the assessment of implementation. Leithwood and Montgomery (1980) have developed a formative evaluation methodology for determining the degree of implementation of an innovation that involves the following procedures: (1) identifying descriptive dimensions of the innovation, (2) specifying practices implied by the innovation, (3) describing actual practices, and (4) comparing actual with intended practices. To accomplish these objectives, they developed a multidimensional profile analysis of the innovation evolving from nonuse to full implementation. Some of the tasks required to develop the profile are:

1. Identify the number and nature of sources of information relevant to the innovation's intended practices (e.g., demands of innovation adaptation created by the particular organizational environment).
2. From the selected information sources, identify objectives of the innovation.
3. From the selected information sources, identify means theoretically capable of producing the intended outcomes.
4. Define the ideal implementation in terms of information from tasks 2 and 3.

5. Describe the range of current actual practices.
6. Rank descriptions of the range of current actual practices in order of proximity to the definition of the ideal implementation.

The profile serves as the basis for instrument development. It locates user behavior in relation to the dimensions and levels of use identified in the profile, thereby yielding important diagnostic information. Additionally, with multiple applications of the methodology, information about the effectiveness of implementation strategies or summative evaluation information is generated. This methodology or some variation has much to commend it.

DISCUSSION

As stated at the outset of this paper and supported by this review, one of the central phases of change--implementation--has been, comparatively speaking, neglected as a topic of study. Consequently, an important ingredient in implementation--the role of management--remains virtually unexplored. The few attempts to examine empirically the antecedents, processes, and consequences of implementation is characterized by very general theorizing, personal accounts or testimonies, and cataloging of techniques. This work has been useful from the standpoint that some of the factors affecting implementation have been delineated and some of the guidelines for dealing with the practical demands of implementation of innovation have been proposed. On the whole, however, the state of knowledge extracted from the existing literature is fragmented, lacking in unifying principles, and marked by contesting philosophical and methodological differences. It may be premature, however, to expect more at this stage of inquiry.

Given the existing state of the art, a change in the focus of the study of innovations in organizations is warranted. Change and its implementation are complicated and multidimensional in nature. Change follows a course that must involve continual adaptation to forces operating within and without an organization and, therefore, is continuous and dynamic. It is not merely influenced by some unitary factor or set of factors such as organizational structural characteristics or leadership style. An approach that has as its goal the identification of factors that best predict the success of an implementation yields little in the way of achieving understanding of this complex process. This strategy is not geared to deal in any systematic fashion with unexpected consequences that result when implementation is put into motion or to capture the turmoil and disequilibrium that arises between groups with opposing interests when the existing balance is upset by the introduction of change. The attempt to decipher complex realities with simple "a-affects-b" hypotheses brings to mind these thoughts expressed by McGuire (1973):

In our holy determination to confront reality and put our theory to the test of nature, we have plunged through reality, like Alice through the mirror, into a never-never land in which we contemplate not life but data. All too often the scientific psychologist is observing not mind or behavior but summed data and computer printout. He is thus a self-incarcerated prisoner in a platonic cave, where he has placed himself with his back to the outside world, watching its shadows on the walls. There may be a time to watch shadows but not to the exclusion of the real thing. (p. 453)

The significant question of what actually happens during the implementation process does not readily lend itself to quantitative analysis. At the present stage of knowledge, greater understanding of the processes and problems involved is more likely to be achieved through investigation that is qualitative and descriptive in nature. This can only be accomplished, however, if the information gathered is documented, systematic and detailed, and subject to some form of analysis (see Clegg, 1979, as one possible example). Relevant to this point is the distinction between traditional logicodeductive and grounded theory (Dunn & Swierczek, 1977). Grounded theory is generated directly from the observations and experiences acquired in the course of research of a subject. Theory building of this kind may capture the critical problems facing researchers and practitioners involved in the implementation of change.

The review of the literature dealing with managers' selection of implementation strategies and procedures suggests the existence of a basic antimony. There appear to be essentially three distinct orientations vis-à-vis the change situation. One managerial view focuses on technology by defining the situation primarily in engineering and work assignment terms. A second view focuses on structure by emphasizing such factors as span of control and role prescription. The third view focuses on people by emphasizing such factors as interpersonal processes and values of organizational members. As this report has suggested, change can be introduced through the alteration of any one or any number of system variables. Given the complex character of the process of the implementation of the innovation, each of the three orientations seems to have value and the most reasonable and most promising approach seems to be one that incorporates all three. A managerial approach representative of one orientation may be most appropriate at one stage of the change process, while another approach may be most applicable at another stage. Germane to this issue is Walton's (1979) three-level conception of work innovation in which he emphasizes the interconnectedness of techniques, outcomes, and culture in the context of change. His observations have broad applicability and currency for most situations where change is proposed. The often heard statement that there is no single "best" approach for implementing an innovation still holds.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings, observations, and conjectures of researchers and practitioners of implementation of change, several conclusions and recommendations are forthcoming. First, the study of management's role, particularly middle management, should be intensified. This work should include the investigation of the strategies and procedures employed by management in implementing innovations. Second, greater emphasis should be placed on approaches that incorporate documented, systematic, and detailed analyses that are qualitative and descriptive in nature. Accordingly, an orientation should be adopted in which explanatory mechanisms develop directly from the observations acquired in the course of research of the change at hand, rather than from the typically employed logicodeductive model. Finally, it is concluded that implementation of innovations can best be understood in functional terms; that is, individuals seek to attain a variety of goals, cope with factors that have a bearing on these goals, and process information relevant to these concerns. Thus, when a change is introduced, a variety of needs and concerns, both at an individual and larger unit level, may be activated. The manner in which organizational members or units respond to the change is dictated by the various concerns and resources available. A functional analysis of change contrasts with an analysis derived from a theoretical framework that explains the phenomena on the basis of some monistic principle (e.g., expectations, resistance). The functional approach calls for the study of a specific change situation by first identifying the unique properties and

processes operating in that situation and then applying appropriate existing theories and concepts from appropriate specializations to that specific situation. The key to this approach is the development of a system or combination/integration of all the principles and concepts that best describe that situation. Obviously, the critical element is the ingenuity with which these principles and concepts are integrated. One final point, the adopted functional view regards individuals as oriented not only toward defense of the status quo, the maintenance of consistency, and the reduction of ambiguity, but also toward new learning, self-utilization, and development of competence. This view suggests that change poses not only a problem, but a challenge, and places a broader interpretation as to its study.

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APPENDIX

**EFFECTS OF STRUCTURAL, CONTEXTUAL, PROCESS,
AND INDIVIDUAL VARIABLES ON IMPLEMENTATION OF CHANGE**

EFFECTS OF STRUCTURAL, CONTEXTUAL, PROCESS, AND INDIVIDUAL VARIABLES ON IMPLEMENTATION OF CHANGE

Structural Characteristics

Differentiation

Differentiation, which is also termed complexity, is defined as the number of occupational specialties in an organization and their professionalism (Pierce & Delbecq, 1977; Zaltman et al., 1973). A highly differentiated or complex organization is characterized by the absence of a single professional ideology, cross-fertilization of ideas, and tolerance for conflict. These diverse occupational backgrounds bring various sources of information into the organization that can then stimulate the initiation of innovative proposals.

The diversity of ideas and backgrounds that stimulates creativity can inhibit the decision to adopt, which can lead to resistance at the implementation stage (Wilson, 1966; Pierce & Delbecq, 1977). Havelock (1969), in his study of educational innovations, suggests that diversity can impede communication during implementation in three ways: (1) by fostering the formation of unique coding schemes (languages), (2) by stimulating interunit competition, and (3) by encouraging the formation of separate and incompatible group norms. So much diversity also makes it difficult for any one power source to reach or force agreement on adoption decisions and on how the adopted proposals should be implemented (Wilson, 1966).

Formalization

Formalization is defined as the emphasis placed within the organization on following specific rules and procedures in performing one's job (Zaltman et al., 1973). The assumption here is that strict adherence to rules and procedures may prohibit organization decision makers from seeking new or alternative sources of information. Shepard (1967) indicates that low formalization, which permits openness in a system, is necessary for initiation of proposals for innovation. He argues that formalization identifies a role of the incumbent's expected behavior and, unless innovation is expressed as expected behavior, there is a strong possibility that predetermined modes of behavior will become rigidified. By contrast, singleness of purpose and norms of behavior are generally required for effective adoption and implementation of proposals (Pierce & Delbecq, 1977; Zaltman et al., 1973). Zaltman et al. claim that the more organic structure (i.e., less formalized) required for initiation must give way to greater formalization of decision processes at the adoption and implementation stages.

During the implementation phase, formalization dictates appropriate behavior. The degree of congruence between the new work behavior and existing norms affects whether the behavior will be perceived as appropriate (Goodman, Bazerman, & Conlon, 1980). Gross and his colleagues (1971) offer an example in analyzing some barriers to the implementation of the new catalytic role model for teachers. They found that teachers were not clear about the kinds of role performance required. The teachers experienced role conflict and resulting pressure and stress. Thus, the implementation was ineffectual.

Centralization

The centralization dimension is defined in terms of the locus of authority and decision making in the organization. The higher in the organization the decision making takes place and the less participation in decision making that exists in the organization,

the greater the centralization, and vice-versa (Zaltman et al., 1973). Organizations that are less centralized and less bureaucratized are better able to accept new ideas and innovations (Shepard, 1967).

However, once the decision to adopt has been made, organizations that are more centralized seem to be more effective when implementing the proposal for a number of reasons. There is a potential for conflict and bargaining to increase between interest groups after a proposal has been adopted. Having a clearer line of authority and responsibility makes consensus easier to achieve or force, because of greater influence over these interest groups (Shepard, 1967). Another reason is that organizations with clear lines of authority are better able to provide members with information concerning appropriate behavior and role expectations regarding implementation. Not having a clear sense of role requirements creates barriers to implementation (Gross et al., 1971) and can create ambiguity of organizational norms (Goodman et al., 1980).

One final point concerns the degree of centralization necessary for decisions concerning implementation. Hage and Aiken (1967) suggest that, if participation is valued by members, a less centralized structure can facilitate implementation by contributing to the acceptance of change through increased commitment.

The above discussion suggests that there is no one best way to structure an organization to facilitate innovation. Rather, it may be appropriate to view the structure as comprised of a variety of dimensions that may alternate from one phase of innovation to the next. Further, this alteration can take place within each phase. For some organizations, the two requirements for flexibility and stability are mutually exclusive. However, the organization can address this dilemma by simultaneously expressing these two forms in different parts of the organization. As an example, Lawrence and Lorsch (1967) found that, in effective organizations (i.e., those more likely to implement proposals successfully), the fundamental research groups (those responsible for initiation of ideas) had the least structure, whereas the production units (those responsible for implementation of ideas) were the most structured.

Size

Hage and Aiken (1967) state that larger organizations are more innovative, partly due to availability of resources and differentiation that size affords. A large organization also permits specialization, which creates a "critical mass" necessary to build a power base. This power base is a critical requirement in increasing the likelihood that the implementation will be successful.

Contextual Factors

Environmental Uncertainty

The organization environment, or task environment, refers to those conditions external to the system that have immediate impact on internal functioning (Katz & Kahn, 1966). The external environment is composed of suppliers, consumers, competitors, regulatory agencies, and scientific or technical reference groups. Environment factors are extremely important considerations in the context of implementation. In fact, the nature of the environment impacts not only organizational structure but also the need for innovation, the type of innovative decisions made, and the subsequent implementation strategies employed to effect change. An extended discussion of this topic is beyond the purview of this paper. Those interested should refer to such sources as Lawrence and Lorsch (1967), Aguilar (1967), and Katz and Kahn (1966, 1978).

Age

When age is defined in terms of the length of tenure of strategic organizational members, it inhibits innovative behavior (Pierce & Delbecq, 1977). Aiken and Alford (1970) indicate that one of the primary stimuli for change comes from external organizational sources. The lower the infusion of new members into an organization, the less likely new ideas will permeate into the system. Age can also impede implementation because role requirements and social norms are well established and closely guarded (Goodman et al., 1980).

Climate for Change

When discussing the climate that the organization is experiencing prior to and during innovation, it is important to focus on the "climate for change." Climate for change is relative in that it is assumed to be based on individual perceptions of actual events and processes experienced in the organization. At least three important dimensions of climate for change have been identified: the need for change, the openness or willingness to change, and the potential or capability for change (Duncan, 1972).

The relationship among the climate for change dimensions offers implications for implementing change and managing resistance to change. The most interesting among Duncan's (1972) findings was that the need for change is negatively associated with openness to change and potential for change ($r = -.26$ and $-.57$). These results suggest that the more personnel perceive that there is a need for change, the less they perceive themselves and their organization as able to deal with the change. The reverse also holds: The greater the perceived openness and potential for change, the lower the perceived need for change. The great need for change may create anxiety with the result that personnel are skeptical about the success and the amount of commitment to the change, and are less likely to try it. Duncan indicates that what may be required is to foster proper expectations during the change process and awareness regarding the necessary skills and abilities to make the change work.

Process Factors

Communication and Decision Making

The communication and decision-making characteristic most central to implementation is participation. Schefflen, Lawler, and Hackman (1971) state that participation in designing new work behavior induces a higher level of commitment among participants than that which would not be realized without it. They also suggest that change introduced by participants may be more durable (i.e., more persistent) than that introduced by others. Somewhat contrary to this opinion, Dunn and Swierczek (1977), in a retrospective analysis of 67 case studies, found that the percentage of successful innovations in those cases using participative orientations was the same as those using a nonparticipative one. Although no definitive conclusions can be reached from these results, the importance members place on participation may be an important moderating variable.

Transmission and feedback of information are also important in the study of process variables. Implementation and eventual institutionalization typically require a protracted period of time. During this time, change in personnel is likely. Therefore, the behavior and organizational arrangements dictated by the change must be maintained. This requires that the old members pass information concerning the new behavior to new ones. Transmission refers to the socialization process that maintains these arrangements. The extent to which the change is integrated into the functioning of the organization

determines the type and character of the transmission process. If behavior is highly integrated, less elaborate or extensive transmission efforts will be needed than when the change is not as highly integrated. While transmission is an important characteristic, it has been neglected in some well-known interventions because of the tendency to focus on the "front end" of the intervention, rather than on the mechanisms to keep it going (Goodman et al., 1980).

The nature and quality of feedback can affect the degree of implementation. Feedback is a continuous process imbedded in the control system. It allows for the process to be circular at a multitude of substages (sensing performance gaps, evaluating success).

Stufflebeam (1967) identified four types of feedback that can occur during innovation:

1. Context evaluation or feedback involves the continual monitoring of the system to determine unmet needs and the underlying causes of problems.
2. Input evaluation or feedback concerns the assessment of possible solutions proposed to alleviate system needs.
3. Process evaluation or feedback determines whether the innovation is working as expected and identifies necessary modification.
4. Product evaluation or feedback focuses on the measurement of the innovation's overall quality.

Goodman and his colleagues make a distinction between two properties of feedback, level of feedback aggregation, and content. Level of feedback aggregation deals with the dissemination of information to appropriate member groups. If the innovation impacts on tasks that demand a high degree of cooperation, then group feedback would be more appropriate and more effective. If the innovation impacts on individualistic, divisible, noncooperative tasks, individual feedback is more appropriate.

With respect to content, the second property of feedback, the most important consideration is the extent to which the feedback contains information about personally valued outcomes (Conlon, 1980). Conlon suggests that feedback about outcomes that are not important to individuals (e.g., information concerning work group performance when earnings are valued) is of little use in promoting persistent change.

Control Systems

The organizational control system has major implications for the success of implementing a new proposal. The functions of the control system include guiding, monitoring, and evaluating organizational performance. Central to the guidance function is the kind of reward information communicated and the accuracy of performance data received.

At the individual level, the most pertinent information concerns expectations of rewards associated with the new behavior. These are expectations of ability to perform the new behavior, the relationship of the new behavior and resultant positive or negative outcomes, and the perceived value of the outcomes (Goodman et al., 1980). Thus, effective use of rewards and punishments is based on the level of congruence between the expected and actual outcomes. Greater attractiveness of the rewards and greater congruence between the expected and actual rewards will increase the likelihood of

successful implementation. Beliefs about reward contingencies are determined by such characteristics as credibility, trustworthiness of the communicator, and the similarity of the new behavior to old behavior (Oskamp, 1977).

The reward system must be flexible in order to respond to shifting expectations of individuals. This phenomenon occurs partly because of the incongruity between expected and actual rewards. For example, if actual rewards exceed expected rewards, level of aspiration theory predicts that expectations will be even higher for future rewards (Lewin, 1935). Shifting expectation levels can also occur if reward valences change. If, for example, a work enrichment program is begun and extrinsic rewards up to that point were the only rewards valued by individuals, successful implementation of enriched work may (or should) increase the desire for intrinsic rewards assumed to follow. A reward system that still issues only extrinsic rewards may undermine positive aspects of interesting and self-efficacious work (cf. Deci, 1975).

Reward systems can be helpful in communicating the significance of the implementation effort to organizational members. Lawler (1977) offers an example from a work redesign effort in which everyone involved was given a pay increase commensurate with their new job responsibilities before the new job began. This indicated to the individuals that they were going to perform more important work and that the change was real. Lawler goes so far as to say that the reward aspects of the control system has such profound implications for the success of implementation that it should always be considered before the project is begun.

With respect to the other functions (monitoring and evaluating), it is important that the control system measures and rewards the activities critical to implementation (e.g., cooperation, skill acquisition) at the level (individual, group, or department) affected by the change. Again, this communicates to the individual what is required new behavior and what new behavior will be rewarded or punished. This facilitates implementation insofar as it increases the accuracy in individual determination of reward contingencies. Improper or inadequate measures and contingent control system rewards may generate a role conflict situation in which individuals receive conflicting messages of what the organization requires during implementation. This can lead to resistance or rejection unless the control system is modified to reflect the changes demanded by the innovation (Katz & Kahn, 1966). Similarly, improper or inadequate measures of required new behavior can also cause individuals to engage in strategic behavior--actions designed solely to influence the information system--and to look good for the control system measure (Lawler & Rhode, 1976).

Another important control system determinant is the establishment of organizational norms and goals. Individuals learn the appropriate norms and goals by discerning what behavior is being monitored and how that behavior is being rewarded or punished. The degree of congruence between the new work behavior and existing norms affects whether the new behavior will be perceived as appropriate. The control system must redefine norms and goals and reestablish the commensurate rewards, or punishments, if implementation is to be successful (Goodman et al., 1980). Finally, the control system also transmits the new behavior to other groups or new organizational members through socialization (e.g., group sanctions and rewards, group cohesiveness) and visibility (Schein, 1968).

Ability to Deal with Conflict

The ability to deal with conflict, whether by individual organizational members or competing groups, is important at all stages of innovation. During initiation, there may

be conflicts concerning ownership and control of the innovation as well as to what proposals should be accepted. There will also be conflicts regarding the process by which adopted proposals are implemented. The manner in which the conflict is resolved affects the success of the implementation.

The various strategies identified for dealing with conflict include avoidance, smoothing/playing down differences, confronting the conflict, and forcing resolution through some coercive means (Lawrence & Lorsch, 1967). Confrontation has been found to be a most effective way for dealing with conflict because conflict is a legitimate organizational phenomenon that should be acknowledged and dealt with. Confrontation helps place the relevant facts before the parties involved so discussion can follow until some agreement is reached. It also affords the organization a better opportunity to resolve disputes such that they will not occur again (Zaltman & Duncan, 1977).

Interpersonal Relations

An adjustment toward dealing with interpersonal relations is a focal consideration in implementation. During implementation, the organization faces uncertainty, and strategies for dealing with these situations usually have not been embodied in preestablished rules and regulations (Zaltman et al., 1973). Here greater reliance must be placed on the informal network of relationships. Throughout implementation, the uncertainty and risk taking that often occurs cause stress and anxiety for individuals. Continued stress and anxiety within the group destroys communication linkages and reduces the level of performance (Argyris, 1965). If individuals are fully integrated into the group, information processing capabilities are potentially increased by the individuals' commitment to working toward group goals (Zaltman et al., 1973).

Argyris (1964) suggests that rational and logical communication increases the effectiveness of any decision. This entails good interpersonal skills, such as openness, the willingness to take risks, and the capacity to trust.

Individual Factors

While a number of individual factors, such as motivation and vocational interest, may have a significant effect on change, this section will focus primarily on the discussion of attitudes as they relate to change. The attitudes of the individual members of the organization play an important role in predicting innovation. Pierce & Delbecq (1977) state that the:

Discussion of innovation is incomplete without recognizing that organization structure does not determine innovation, but merely sends signals to organizational actors. The human component of organizations is characterized by members having attitudes and values. The attributes will sometime dominate and sometimes mediate structural variables. (p. 36)

One example of the predominant role that attitudes play is presented by Hage and Dewar (1973). They found that values are better predictors than are structural variables. The values of elites were the best predictors and explained a substantial amount of variance.

A number of studies have investigated the relationship of attitude to change with various member attributes. Attitude toward change, in general, has been found to be

related to manager's education (Trumbo, 1961; Kirton & Mulligan, 1973), age, level of confidence, and status (Kirton & Mulligan, 1973), and work group membership (Trumbo, 1961). Kirton and Mulligan (1973) also found that manager's age, level of confidence, and status were related to attitude towards a specific innovation, a new appraisal scheme. Gruenfeld and Foltman (1967) investigated the implementation of a data processing system and found that supervisors who are more integrated and satisfied with management are more likely to view the new system positively. Siegel and Kaemmerer (1978) developed an instrument for measuring the perceived support for innovation in organizations. Factor analysis revealed the major factor, support for creativity, and two lesser factors, tolerance of diversity and feelings of ownership. Abrams et al. (1977) assessed the attitudes of sonar operators towards a new sonar system and towards change in general. The results supported the hypothesis that a relationship exists between performance and system-specific attitudes: The higher the performance level on the system, the more positive the orientation towards the system. While not significant, a similar trend was apparent for performance and attitude towards change in general.

The relationship between job satisfaction and acceptance to change depends on the phase of the change process. Job satisfaction has been found to be positively associated with the rate of program change (Hage & Aiken, 1967). Sheposh, Young, and Wakelin (1978) have found that job satisfaction and professional involvement are significantly related to the acceptance of the innovation by individuals in the organization. The March and Simon (1958) model of innovation, however, presents a contrasting view: Innovation behavior results from job dissatisfaction. Pierce and Delbecq (1977) hypothesize that the role of satisfaction may be contingent on the status of the organization member:

Strategic decision makers and those charged with major organizational responsibility may be more susceptible to search behavior in the face of dissatisfaction than the rank and file. The rank and file may choose to innovate, only when there is satisfaction, job involvement and/or strong intrinsic work related motivation. (p. 33)

One explanation for the obtained relationship of attitudes towards change has been that proposed by Mealiea (1978). He posits that attitudes towards change are learned and presents a conceptual model that describes how individuals learn to resist planned change. He contends that planned change may block the members of the adopted unit from satisfying their dominant needs. The members learn to associate the change with negative tension states. If an innovation is introduced, this perceived link between blocked need satisfaction and change influences the level of the members' resistance to the change. Another concept in the treatment of attitudes is the notion of commitment. As defined by Salancik (1977), commitment binds the individual to behavioral acts. Attitude, commitment, and behavior are linked in a continuing reciprocal process, each generating the other in an endless chain. Whether the commitment is beneficial or disadvantageous depends on the behavior's congruence with the desired outcome. Resistance to change is seen as a function of the clarity of committed past actions and the uncertainty of future behaviors.

The fact that attitudes have been found to be instrumental in whether or not an innovation is accepted should not be automatically viewed as an indication of an individual's initial resistance to change. As mentioned earlier, Gross et al. (1971) argue that resistance can develop after an innovation has been introduced; that is, during the period when implementation is attempted. Kelman's (1979) recent treatment of the role of action in attitude change has relevance here. Kelman maintains that significant

attitude change always occurs in the context of action (i.e., overt behavior that produces some change in the environment). A variety of actions may promote attitude change, including: (1) response to situational demands where individuals engage in action vis-a-vis an object for reasons often unrelated to their initial attitudes toward the object, (2) adherence to a new policy where change in social policy may set into motion a process of attitudinal and behavioral change, (3) manifestation of attitude where individuals engage in actions that flow directly from their attitudes toward that object, and (4) testing of attitudes where individuals engage in a process of incipient attitude change. Kelman does not propose that these four types represent a formal scheme. Simply, they suggest ways in which action may lead to attitude change. Clearly, these processes may be engaged when individuals are required to deal with a change during the implementation pahse.

As a summing up, Pierce and Delbecq's (1977) statement is appropriate:

The conditions under which membership attributes moderate and/or intervene in the organization-innovation relationship is poorly understood, and may account for much of the variance in organizational innovation reported under what would seem to be parallel structural conditions. (p. 36)

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